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Aid for Trade

Do Those Countries That Need It, Get It?

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Abstract

This paper is designed to help both the beneficiary governments and donors of aid for trade identify countries that are under-performing in trade and which are receiving less aid for trade than their global performance might otherwise suggest is necessary. Building on previous work, it provides a procedure to assess potential need for spurring trade volume, and then looks at country allocations of aid for trade to see which are receiving below-average amounts in the supply of aid for trade—relative to their potential needs. Countries, as they design national development strategies, may wish to consider giving greater attention to trade and requesting that donors allocate to them more aid for trade. As part of the analysis, the paper provides a conceptual framework for selecting indicators of trade performance and its policy determinants that the WTO and its partners might monitor closely as part of the aid for trade initiative.

This paper—a product of the International Trade Department, Poverty Reduction and Economic Management Network is part of a larger effort in the department to foster monitoring efforts of aid for trade. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at _egamberoni@worldbank.org and rnewfarmer@worldbank.org.

Aid for Trade: Do Those Countries That Need It, Get It?

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1.Introduction

WTO Ministers during the Hong Kong ministerial emphasized the importance of Aid for Trade to improve the capacity of countries to participate in the world economy. Indeed, while the overriding objective of the Doha round has been to create new opportunities for countries to trade by reducing external barriers, ministers recognized that internal barriers might prevent countries from taking advantage of any new opportunities. Internal constraints include investment climate factors – conflict, macroeconomic instability, and weak property rights. Other internal constraints are more specific to trade, including trade-related infrastructure (e.g., ports and transport), trade-related institutions (e.g., customs or standards agencies), and price incentives that through barriers at the border create an anti-export bias. Governments can use donor-provided assistance – aid for trade – to help address the internal barriers and to improve their trade performance. The ability of governments to avail themselves of aid for trade depends on the availability of overall amounts of assistance (the supply) and the decisions of governments, working with donors, to allocate available development assistance to trade-related problems instead of alternative -- and often no less urgent -- development problems (the need). This paper brings together an analysis of both the supply and potential need at the country level with two purposes in mind. The first is to help both beneficiary governments of aid for trade and the donors to identify countries that are under-performing in trade and which are receiving less aid for trade than their global performance might otherwise suggest is necessary. The second is to single out a few indicators of trade performance and its determinants that the WTO and its partners might monitor with particular attention as part of the aid for trade initiative.

Gamberoni and Newfarmer (2008) provided a first estimation of potential need based on ten indicators of performance and capacity to trade. Hoekman and Wilson (2010) repeat the Gamberoni and Newfarmer (2009) exercise and construct an indicator of demand based on principal components analysis. The list of underserved countries appears close also using an indicator built on principal component analysis, suggesting that the results are robust to the choice of variables that proxy trade capacity. Building on Gamberoni and Newfarmer (2009), this paper formalizes and develops a methodology to identify empirically a potential need of aid for trade. We derive an aid for trade allocation and we empirically observe whether countries are receiving the aid for trade as the allocation would predict. Specifically,

we take up two questions: (i) which countries might exhibit a potential need for aid for trade because of shortcomings in the supply-side determinants of trade -- infrastructure, institutions, and policy-induced incentives that hamper their trade performance? (ii) which countries are receiving below average supply of aid for trade – relative to their potential needs? .

The paper begins by building a theoretical model and deriving an aid allocation rule. Subsequent sections describe: the empirical strategy for constructing a trade-related capacity indicator based on the impact of infrastructure, incentives, and institutions on trade performance; the sources of data and estimation strategy; and then the econometric results, including the value of the proposed trade- related indicator and the overall rule for allocating aid for trade. We conclude with some implications for policy.

2. An aid for trade allocation rule

Building on the literature on aid allocation (Collier and Dollar, 2002), we assume that a donor aims at providing aid for trade to maximize the trade-related capacity of a developing country. While the final goal of aid for trade is to reduce poverty, aid for trade aims to reduce trading costs through some combination of policy changes and new investment. Reducing transaction costs will have a direct effect in improving export performance -- which in turn is expected to spur growth and reduce poverty. As in Collier and Dollar (2002), we assume that in allocating aid for trade a minimum set of criteria guide the donor. We include as criteria the size of the country's population and an environment conducive to aid effectiveness (since donors have found that assistance to ineffective governments is often wasted or lost to corruption).

We assume that the donor has the following utility function

$$U = \sum_{i=1}^{N} w_i(\ env_i\ ,\ pop_i) TC_i\ (A_i) \quad ; TC_i^{'} > 0;\ TC_i^{''} < 0;\ \frac{\partial w_i}{\partial env_i} > 0;\ \frac{\partial w_i}{\partial pop_i} > 0 \quad (1)$$

and budget constraint:

$$\sum_{i=1}^{N} A_i = \bar{A}\,; \tag{2}$$

Where TC_i is an indicator that summarizes the trade-related capacity of the recipient country i, and A_i represents the total aid for trade received by country i. We further assume that the typical donor focuses particularly on countries with larger population, as proxied hereafter with the term pop_i , and an environment conducive to aid effectiveness, as proxied by the variable env_i, These assumptions are summarized in a weight given to each recipient country, $w_i(env_i\ pop_i)$. Finally, as in Collier and Dollar (2002), we assume that the donor is also subject to the constraint that the total amount of aid for trade, $\bar{A}$, given to all N countries in a period equals a fixed amount.

Setting up the Lagrangian for the maximization of the trade-related capacity (equation 1) subject to the constraint that total aid for trade of the donor equals a fixed amount (equation 2),

$$\text{Max L} = \sum_{i=1}^{N} w_i(pop_i,\ env_i) TC_i\,(A_i) + \lambda[\bar{A} - \sum_{i=1}^{N} A_i] \tag{3}$$

we obtain the following first order condition:

$$\frac{\partial TC_i}{\partial A_i} = \lambda \frac{1}{w_i(.)} = \frac{\partial TC_j}{\partial A_j} = \lambda \frac{1}{w_j(.)} => \frac{TC_i^{'}}{TC_j^{'}} = \frac{w_j(.)}{w_i(.)} \tag{4}$$

The FOC suggests that, taking into account country weights, the marginal benefit in terms of aid for improving trade related capacity should be equal across countries.

Let us assume that aid for trade improves the trade capacity TC at the same diminishing rate (α) for all recipients and that it also has a lower impact on countries with better initial trade-related capacities, $TC_{i,o}$. We further standardize aid for trade per unit of GDP since more aid for trade is needed for larger and more sophisticated countries. Specifically, let us assume that:

$$TC_i = TC_{i,o} + \left(\frac{A_i}{gdp_i TC_{i,o}}\right)^{\alpha}\ ; 0 < \alpha < 1 \tag{5}$$

In the absence of more information, we also assume that the weights are linear in the index of the quality of the environment (a higher index value indicating a better environment) and

the population of the country, i.e. $w_i = env_i \ pop_i$ This weighting scheme is not dissimilar to the one used by the World Bank in its aid allocation formula.[2] Plugging this definition of the weight and equation 5 in equation 4 gives the following equality:

$$A_i^{\alpha-1} = \frac{\lambda TC_{i,o}^{\alpha} gdp_i^{\alpha}}{\alpha env_i \, pop_i} \quad (6)$$

Multiplying both side by gdp_i, rearranging terms, taking logs of equation 6, and focusing only on interior solutions, where each country receives some aid for trade, provides for the following aid for trade allocation rule:

$$\frac{A_i}{gdp_i} = \text{constant} - \frac{\alpha}{1-\alpha} TC_{i,o} - \frac{1}{1-\alpha} \frac{gdp_i}{pop_i} + \frac{1}{1-\alpha} \, env_i \quad (7)$$

The aid for trade allocation rule thus suggests that aid for trade per unit of GDP, $\frac{A_i}{gdp_i}$,should go to countries with lower trade related capacity, $TC_{i,o}$, lower income per capita ($\frac{gdp_i}{pop_i}$), and better quality of the environment, env_i. In the next session, we thus propose a methodology to construct an empirical trade-related capacity indicator, $TC_{i,o}$

3. Constructing a trade related capacity indicator: The gravity equation of trade

Based on a well-established literature, trade-related capacity directly influenced by AFT can be grouped in three big categories:

- *infrastructure*, particularly transport, ports, energy, and telecommunications;
- trade-related *institutions*, such as customs and port management facilities;
- and *incentives* to export, particularly border barriers and other policies that discourage private investment in exports and efficient import-substitution.

To approximate TC, we first attach equal weights of one-third each to variables that proxy each category. To make the estimate more precise, we also rely on the gravity model to

[2] See "How IDA resources are allocated" http://www.worldbank.org/ida/how-ida-resources-allocated.html

identify the relative importance of incentives, infrastructure, and institutions in explaining export flows. In one of its general formulations (see Anderson and van Wincoop, 2003) the gravity model is:

$$V_{ij} = \left(\frac{Y_i Y_j}{Y_w}\right)\left(\frac{\tau_{ij}}{\Pi_i P_j}\right)^{1-\sigma}; \sigma > 1 \quad (8)$$

Where V_{ij} is the volume of trade from country i to country j. The volume of trade is a function of the nominal GDP of country i, Y_i, the nominal GDP of country j, Y_j, the ideal price index of the country which aggregates the varieties sold in country i, Π_i, and the ideal price index which aggregates the varieties sold in country j, P_j

The term $\tau_{ij}^{1-\sigma}$ summarizes trade costs and can be further disentangled into behind the border costs of the exporting country, the importing country, and bilateral trade- related costs. Each of these costs can be further divided into variables related to geography or history and trade capacity proxies. The latter includes the quality of trade infrastructure, institutions, and incentives. The incentive regime drives the ability of firms to import from the most efficient supplier; institutions, such as the quality of the logistic system, allow firms to take part in value chains; and infrastructure is an essential part of the production process. Geographical and historical variables include the bilateral distance among exporting and importing countries, whether a country is landlocked, whether the two countries share a common border, and past colonial history.

Following Limaõ and Venables (2001), we define trade costs as a production function which equals:

$$\tau_{ij}^{1-\sigma} = TC_i^{\beta_1} TC_j^{\beta_2} D_{ij}^{\beta_3}; \qquad \beta_1 + \beta_2 + \beta_3 = 1 \quad (11)$$

Where $TC_i^{\beta_1}$, represents the exporter trade-related capacity, $TC_j^{\beta_1}$ the importer trade-related capacity, and D_{ij} represent bilateral trade costs. Let us further assume that:

$$TC_i^{\beta_1} = \text{infrastructure}_i^{\gamma_1} \text{institution}_i^{\gamma_2} \text{incentive}_i^{\gamma_3} \text{landlocked}_i^{\gamma_4}; \quad (12)$$

Inserting (11) and (12) into (8) and taking logs gives the following expression:

$$lnV_{ij} = \gamma_1 infrastructure_i + \gamma_2 incentives_i + \gamma_3 institutions_i + \gamma_4 landlocked_i + (1 - \beta_1 - \beta_2)D_{ij} + \beta_2 TC_j + lnY_i + lnY_j + \varpi ln\Pi_i + \pi lnP_j \quad (13)$$

Estimation of equation 13 can be used to construct a trade- capacity index. Using the estimated coefficients that proxy for the impact of infrastructure, incentives, and institutions on exports, we can indeed derive the following empirical trade-related capacity index:

$$\mathrm{TC_{io}} = (\widehat{\gamma_1} infrastructure_i + \widehat{\gamma_2} incentives_i + \widehat{\gamma_3} institutions_i)/(\widehat{\gamma_1} + \widehat{\gamma_2} + \widehat{\gamma_3}) \quad (14)$$

This indicator represents a weighted average of infrastructure, institutions, and incentives, where the weights are based on the importance of each standardized dimension in explaining exports.[3]

4. Estimation strategy and data

We translate empirically the aid for trade allocation rule (equation 7) using as dependent variable the logarithm of the total aid for trade commitment amounts as a share of the country GDP. We proxy the quality of the environment, using the Kaufman-Kraay "rule of law" indicator. Moreover, we control for the log of the real per capita GDP as a measure of economic development. The aid for trade data used in the analysis cover the period 2007-2010.[4] Data for constructing aid for trade commitments are taken from the OECD CRS database and are constructed using the OECD-WTO Aid for Trade definition. Data for GDP and GDP per capita are taken from the World Bank, WDI database. (See the annex for data sources and for the preliminary statistics, including the correlation table).

We construct an initial trade-related capacity index, TC, using the average values of the past three years for the variables that proxy the quality of infrastructure, incentives, and

[3] We standardize each variable such that they have mean equals to zero and a standard deviation that equals one.
[4] As of 2007, the OECD CRS database includes also data on trade related budget support. Moreover, the OCED CRS database provides data on trade related budget support starting in 2007.

institutions. We proxy the quality of infrastructure following Limao and Venables (1999) and construct an infrastructure indicator based on the density of road, paved road, rail lines, and telephones.[5] All of these variables are taken from the World Bank, WDI database. For institutions, we use the customs component of the World Bank Logistic Performance Indicators (LPI)[6]. We proxy trade policy-induced incentives using the overall tariff trade restrictiveness index of the World Bank applied by the exporter to the rest of the world.[7] Each variable is standardized to have a mean that equals zero and a standard deviation that equals one.

To estimate the gravity equation of trade, we conduct cross-section estimates for the period 2008-2010 by taking the past three years averages values of exports and of the time-variant explanatory variables. This also helps smoothing the effects of the 2008-2009 global crisis. We follow Freund and Rocha (2010) and proxy all the importer variables with importer fixed effects. Concerning the exporter-related variables, we use a remoteness variable to proxy for the Π_i term. Exporter-related infrastructure, incentives and institutions are proxied using the same variables described above and we further add a landlocked exporter dummy.[8] We proxy the average size of exporter by using the logarithm of average value of the nominal GDP for the past three years. Finally, bilateral trade costs D_{ij} include a bilateral distance variable between the exporter and the importer, and a common colonizer, common language, and a common border dummy. All these bilateral costs are time invariant. We further add bilateral tariff rates; since the inclusion of this variable reduces dramatically the sample size, the results are presented mainly as a robustness check.
All countries for which data are available in all the years under analysis are included. (See Annex for a list of countries included in the regression and for the list of data sources and the data descriptive statistics).

[5] As in Limao and Venables (1999), the infrastructure indicator is constructed by transforming the variables such that their mean across the sample is equal to 1 and taking the average across the various components.
[6] The LPI did not come into existence before 2006 and the follow up survey were undertaken in 2009. We use the 2006 value also for the years 2005 and 2007 and 2009 values also for the years 2008 and 2010.
[7] The variable is available for the years 2007 and for 2009. We use the 2009 value also for the years 2008 and 2010 and 2007 values also for the years 2006 and 2005.
[8] Note that the importer dummy captures all time-invariant importer related variables.

5. Estimation of the gravity equation of trade: what defines the potential need for aid for trade?

The results of estimating (13) reported in table 1 show that the coefficients for all variables are significant at the 1% and have the expected signs.. Also as predicted, the coefficient for the GDP is close to one.

Table 1. Gravity equation of trade-Cross-section and pooled regressions

Dependent variable: Ln(average export)	Average 2005-2007	Average 2006-2008	Average 2007-2009	Average 2008-2009	All periods	All periods controlling also for bilateral tariff
Ln(average gdp)	1.067***	1.092***	1.089***	1.064***	1.078***	1.139***
Average Limao and Venable indicator standardized	0.240***	0.268***	0.225***	0.210***	0.235***	0.298***
Ln (Average TRI MFN) standardized	-0.096***	-0.061***	-0.091***	-0.093***	-0.085***	-0.090***
Average LPI custom standardized	0.323***	0.322***	0.303***	0.278***	0.306***	0.277***
Landlocked	-0.340***	-0.405***	-0.437***	-0.414***	-0.399***	-0.262***
Colony	0.645***	0.623***	0.656***	0.627***	0.637***	0.320***
comlang_off	0.479***	0.437***	0.409***	0.437***	0.439***	0.610***
Contig	1.126***	1.118***	1.064***	1.007***	1.079***	1.315***
Lndist	-1.436***	-1.441***	-1.457***	-1.450***	-1.446***	-1.323***
Average remoteness	8.164***	9.228***	8.755***	7.473***	8.395***	8.652***
Ln (Average weighted average bilateral tariffs)						-0.690***
N	12386	12532	12649	12703	50270	23932
Importer dummies	YES	YES	YES	YES	YES	YES
Year dummies					YES	YES

Standardizing the variables permits drawing comparisons among the three key dimensions of the exporter trade-related capacity index. The results suggest that the three dimensions have a similar impact on trade volume but not exactly equal: the quality of customs appears a major determinant, followed by the quality of infrastructure, and finally the trade restrictiveness index facing the exporting country. In sum, these results indicate that, taken together,

infrastructure, incentives, and institutions are important determinants of trade flows. These variables can thus be used to summarize the potential need for aid for trade.

6. Do aid for trade commitments flow to countries with largest need?

Understanding trade cost determinants allows the analysis to turn to the matching of aid flows with needs. We estimate the aid-allocation equation (7) using several variants of the trade-capacity indicator TC_{i0}:

1. A simple average of its three components (infrastructure, incentives, and institutions),
2. A weighted average of its three components using cross-section gravity estimates,
3. A weighted average of its three components using pooled gravity estimates,
4. Entering separately its three components in the regression equation.

To estimate (7) using the first proxy for the trade capacity index, TC_{io}, based on equal one-third weighting, we first calculate the simple average of these standardized proxies. The second estimation of trade costs - that arising from the weights derived from the gravity equation of trade (section 5) - is constructed by taking the weighted average of the standardized values of these variables (see equation 14).

Incentives deserve special consideration. On the one hand, countries with higher disincentives might need more aid for trade. On the other hand, disincentives in the form of high tariffs might be less conducive to the effectiveness of aid for trade. For example, if a country has decided to not open up to trade, trade and associated development assistance might not be a national priority in its development agenda. Moreover, donors may be less interested in providing aid for trade to countries that decide to disincentive trade relations.

With this information it is possible to construct the composite trade capacity indicator in three ways – based on equal weights of trade determinants, a weighted average based on the cross section gravity regression and a weighted average based on the pooled gravity regressions [9]. A lower value of the indicator is associated with greater need for aid for trade.

[9] Results are available from the authors upon request

The trade-related capacity indicator derived using the coefficients of the cross-section estimations of the gravity equation suggests that among the top ten countries with highest potential needs, eight are low-income countries, and they are Mongolia, Namibia, Mozambique, Niger, Rwanda, Algeria, Mali, Zambia, Ethiopia, and Nicaragua. Among the countries with the lowest need, eight are middle income countries and specifically they are (from highest to lower need) Mauritius, South Africa, India, China, Malaysia, Thailand, Sri Lanka, Turkey, Chile, Costa Rica.

Figure 1 reports the preliminary scatter plots of the log of aid for trade commitments as a share of GDP and the indicator that summarizes trade capacity. It suggests that the supply of aid for trade (AFT as a share of GDP) generally supports countries with highest potential need for it (lower value of the trade-related capacity indicator). However, the relationship between the supply and the indicator constructed using a simple average seems stronger than the relationship based on the trade related capacity indicator constructed using a weighted average of the various components.

Figure 1: AFT Commitments as a share of GDP are larger in recipient countries with greater needs

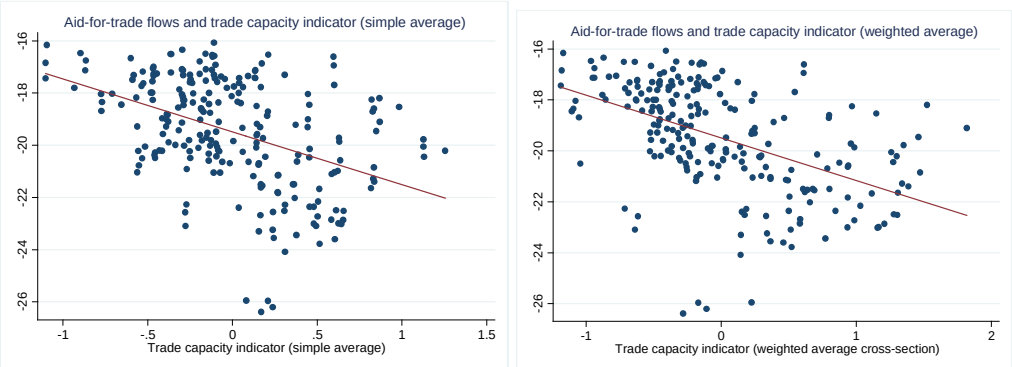


Table 2 reports the result of estimating equation 7 using the composite indicators in columns (1)-(3) and the components entered separately in column (4). Again controlling for the level of development and the quality of the legal system, countries with higher potential needs receive larger aid for trade.

Table 3

Table 2. Regression results, aid-allocation equation

Dependent variable:	Log (aid for trade/GDP)			
	Indicator			
Trade costs	Simple average	Weighted average a/	Weighted average b/	Decomposed
	(1)	(2)	(3)	(4)
Ln (GDP per capita)	-1.566***	-1.520***	-1.518***	-1.569***
Rule of law c/	1.016***	1.085***	1.089***	0.989***
TC_{io}	-0.963***	-0.693***	-0.705***	
Infrastructure d/				-0.179**
Incentives e/				-9.609***
Institutions f/				-1.218***
Observations	232	232	232	232
Year dummies	YES	YES	YES	YES

Notes
a/ Weighted average using cross-section gravity estimates
b/ Weighted average using pooled gravity estimates
c/ Using Kaufman's index, standardized
d/ Using Limao-Venables' index, standardized
e/ Using the MFN TRI, standardized
f/ Using the Customs component of the LPI, standardized

Column (4) shows the separate effects of the quality of infrastructure, incentives, and institutions on the aid for trade allocation decision. Controlling for other factors, countries with the worse infrastructure and institutions receive more aid for trade. Aid effectiveness and GDP per capita also influence the decision on the aid for trade allocation as predicted. However, disincentives (i.e. higher trade restrictiveness applied by the recipient country against import from all the countries of the world) seem to play a larger role and negative role in deciding the allocation of aid for trade.

Table 3 examines the evolution over time of the correlation between AFT commitments and the trade-related capacity index. Clearly, the small size sample requires caution, but the results appear interesting: First, in 2009, the indicator loses statistical significant suggesting that in the beginning year of the global recession; commitments were probably influenced by other factors. Second, the size of the coefficient associated with the trade-related indicator is similar to the results obtained with the pooled regressions.

Table 3: Aid for trade allocation and trade related capacity index

Cross-section regression: 2007-2010

Dependent variable: Log(aid for trade/GDP)

Indicator based on a simple average	2007	2008	2009	2010
Ln (GDP per capita)	-1.512***	-1.612***	-1.582***	-1.549***
Rule of law	0.836**	1.307***	1.034**	0.884**
TC_{io}.	-0.973***	-1.026***	-0.909**	-0.959***
N	58	58	58	58
Indicator based on weighted average (weights derived from the coefficients of the cross-section gravity regressions)				
	2007	2008	2009	2010
Ln (GDP per capita)	-1.407***	-1.574***	-1.562***	-1.509***
Rule of law	0.925**	1.382***	1.077***	0.963**
TC_{io}.	-0.885***	-0.649*	-0.586	-0.731**
N	58	58	58	58
Indicator based on weighted average (weights derived from the coefficients of the pooled gravity regression)				
Ln (GDP per capita)	-1.408***	-1.566***	-1.564***	-1.510***
Rule of law	0.926**	1.393***	1.075***	0.963**
TC_{io}.	-0.867***	-0.747**	-0.563	-0.686**
N	58	58	58	58

Figure 2 shows the relationship between the trade-capacity indicator and aid for trade as a share of GDP, controlling for GDP per capita and rule of law based on the pooled aid for trade equation and the trade capacity index constructed using the cross-section gravity estimates (Table 2, column 2). For simplicity of exposure, we show the scatter plots for the

year 2007 and for the year 2010 and only for low-income countries. Even though aid for trade correlates broadly with potential needs, the match is not perfect. Several countries whose scores would otherwise indicate they should receive large amounts of aid for trade in fact receive relatively below average amounts. The countries that are receiving relatively below average aid for trade are shown below the line in Figure 2. Moreover, these countries appear to be the same countries in both years with some exceptions such as Rwanda or Togo.

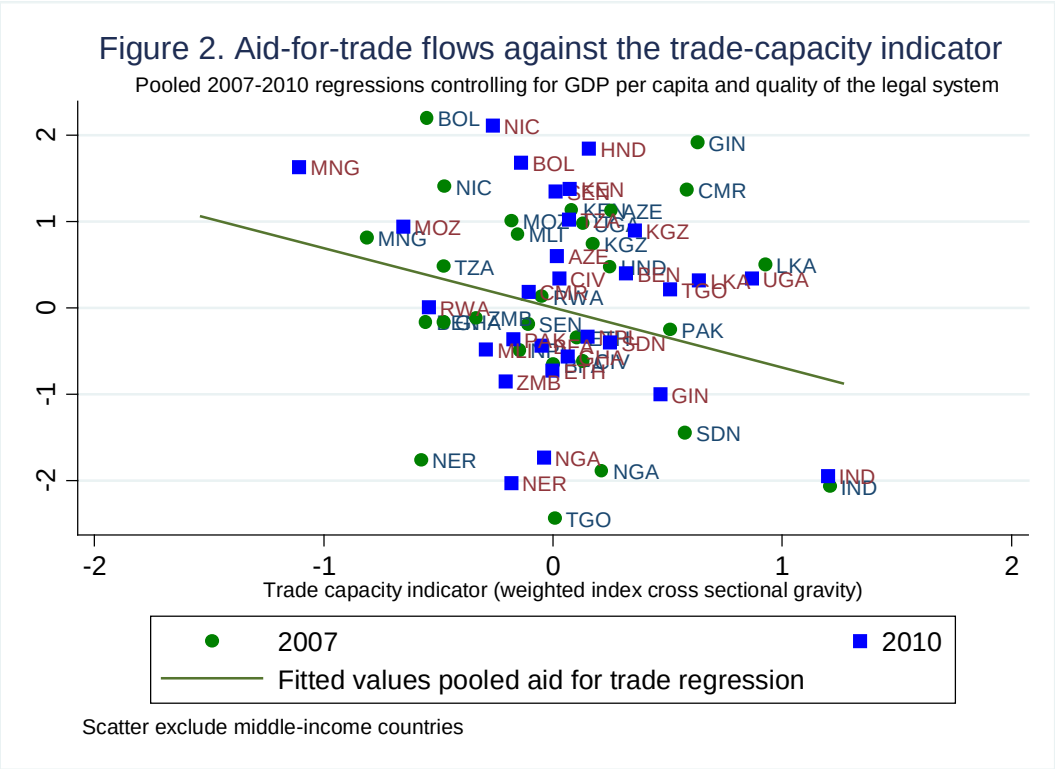


Figure 2 also shows that the relationship between aid for trade commitments and potential needs is stronger for low-income countries: The fitted line in Figure 2 is based on the full sample of developing countries (low and middle-income countries) but the scatter-plot seems to indicate a stronger relation between supply and potential need for low-income countries. We thus analyse the impact of the aggregate potential need for aid for trade on the supply of aid for trade for the sub-sample of low-income countries. The results below (Table 4) confirm that the weighted trade related indicator and aid for trade are more strongly correlated for the subsample of low-income countries.

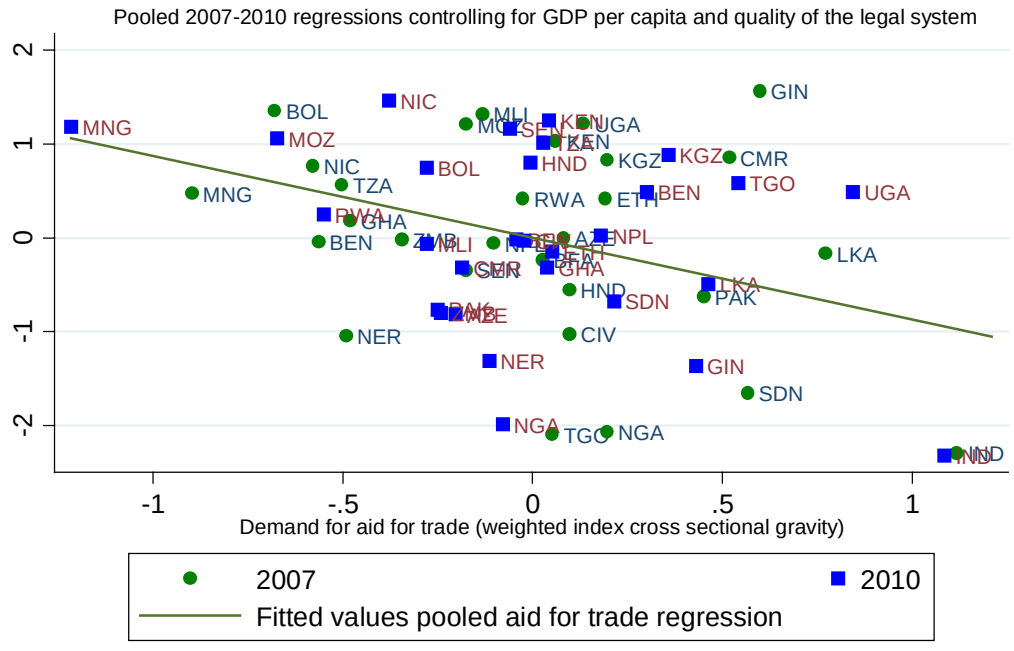
Table 4: Aid for trade allocation and trade related capacity index

Sub-sample of low income countries

Pooled regression: 2007-2010			
Dependent variable: **Log (aid for trade/GDP)**	Indicator based on a simple average	Indicator based on a weighted average- weights derived from the coefficients of the cross-section gravity regressions	Indicator based on a weighted average- weights derived from the coefficients of the pooled gravity regression
Ln (GDP per capita)	-0.707***	-0.547***	-0.548***
Rule of law	0.919***	1.021***	1.020***
TC_{io}.	-0.915***	-0.871***	-0.871***
N	116	116	116
Year dummies	YES	YES	YES

The figure below (Figure 3) shows the results for the year 2007 and 2010 based on the regression provided in Table 4, column 2. Similar countries receive again relatively lower aid for trade compared to their potential need, after controlling for their level of development and the quality of the legal system.

Figure 3. Aid-for-trade flows against trade capacity indicator-- low-income countries



Regression exlcude middle-income countries

While this analysis is not normative, some of the countries appear always “below the line”. Based on the pooled regressions shows in Table 3, low-income countries that have received in all years during period 2007-2010 relatively lower amount of aid for trade includes: Ghana, Ethiopia, India, Nigeria, Niger, Nepal, and Zambia. Underserved countries for at least 3 out 4 years would add Burkina Faso, Pakistan, and Mali.

7. Conclusions

While overall trade performance of developing has been remarkable – indeed unprecedented in recent memory – in the last half decade, several countries have not yet fully harnessed the global economy to their development goals. Moreover, several economies are at risk that the prospect of a slowdown in the global economy will severely erode recent gains as less efficient suppliers to the global market are driven out. For these reasons, focusing the attention of governments on strategies to improve their competitiveness and on mobilizing aid for trade is increasingly urgent.

It is worth reiterating that the results of our analysis that identifies countries warranting more aid for trade are meant to provoke a discussion -- within governments and between governments and donors – not to imply a specific aid for trade allocation. One reason for humility is that governments have other pressing priorities and these are not considered in our discussion. Another is that some problems do not require much aid for trade to resolve – problems stemming from distorted trade regimes can be solved with a stroke of a pen or perhaps a small TA project, so our aggregate supply and need calculations would not apply. Nonetheless, in the aggregate, it would appear that governments and donors have considerable scope for further discussions that would increase aid for trade in many countries, especially among the under-performing and under-served low-income countries.

From a policy perspective, Hoekman and Wilson (2010) point to several important policies the G20 could adopt to foster more trade through aid for trade: improving South-South cooperation for trade and market access; improving regional integration through new investments in capacity building; harnessing the private sector to provide capital and

knowledge to promote trade; and improving evaluation and feedbacks from learning to policy design. This paper would add to their list the importance – indeed urgency – of maintaining donor flows in times of deficit reduction, particularly investments in infrastructure.

This paper also directs the attention of policy makers and donors to country programs in specific countries. Why are selected countries receiving relatively low amounts of aid for trade? Does this reveal gaps in development strategies supported by donors? Does it reflect overall shortages in development assistance that force governments to apportion scarce aid to priorities other than trade and growth? Or are donor priorities themselves directing resources disproportionately toward earmarked programs outside of the trade-growth nexus? Whatever the reason, governments of some countries in particular might look carefully at their utilization of overall development assistance to see whether their programs are serving well their overall growth objectives through trade. Some smaller middle-income countries might do the same.

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Annex

1.1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Ln (exports)	50270	9.48	3.30	-4.57	19.63
Ln GDP	50270	26.06	1.79	22.04	30.30
Limao and Venable standardized	50270	0.00	1.00	-1.21	3.44
LPI custom standardized	50270	0.00	1.00	-2.23	1.61
Ln (TRI MFN) standardized	50270	0.00	1.00	-2.07	3.11
Landlocked	50270	0.14	0.35	0.00	1.00
Colony	50270	0.02	0.15	0.00	1.00
common language	50270	0.15	0.36	0.00	1.00
Contiguity	50270	0.03	0.16	0.00	1.00
ln (bilateral distance)	50270	8.63	0.84	4.09	9.89
Remoteness	50270	0.07	0.05	0.01	0.22

1.2 correlation table

	Ln (exports)	Ln GDP	Limao and Venable standardized	LPI custom standardized	Ln (TRI MFN) standardized	Remoteness	Landlocked	Colony	common language	Contiguity	ln (bilateral distance)
Ln (exports)	1										
Ln GDP	0.435	1									
Limao and Venable standardized	0.2074	0.3315	1								
LPI custom standardized	0.29	0.5832	0.6414	1							
Ln (TRI MFN) standardized	-0.1586	-0.2516	-0.5499	-0.5965	1						
Remoteness	-0.2048	-0.3706	-0.6598	-0.4871	0.4432	1					
Landlocked	-0.1147	-0.2506	0.1053	-0.0576	0.0562	-0.0847	1				
Colony	0.1301	0.114	0.0752	0.0716	-0.0446	-0.0775	-0.0362	1			
common language	-0.003	-0.0715	-0.071	-0.039	0.0816	0.1674	0.0041	0.2047	1		
Contiguity	0.1987	-0.0302	-0.0538	-0.0731	0.0582	0.026	0.0409	0.09	0.1272	1	
ln (bilateral distance)	-0.3001	0.1321	-0.0714	0.0598	0.015	0.2098	-0.1103	-0.0467	-0.0808	-0.3828	1

1.3 Countries included in the estimation of the gravity equation of trade

Exporters			
ALB	DEU	JPN	PER
ARE	DNK	KEN	POL
ARG	DZA	KGZ	PRT
AUS	ECU	KOR	PRY
AUT	ESP	LKA	ROM
AZE	EST	LTU	RUS
BEL	ETH	LUX	RWA
BGR	FIN	LVA	SEN
BHR	FRA	MEX	SGP
BOL	GBR	MOZ	SLV
BRA	GHA	MUS	SVK
CAN	GRC	MYS	SVN

CHE	GTM	NAM	SWE
CHL	HKG	NER	THA
CHN	HRV	NIC	TUR
CIV	HUN	NLD	TZA
CMR	IND	NOR	UGA
COL	IRL	NZL	USA
CRI	ISR	OMN	ZAF
CYP	ITA	PAK	ZMB
CZE	JOR	PAN	

1.4 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Ln (Aid for Trade/GDP)	232	-19.5	2.1	-26.4	-16.1
Ln (GDP per capita) constant 2000	232	7.1	1.1	5.1	9.2
Rule of law	232	-0.5	0.6	-1.6	1.3
Limao and Venable standardized	232	0.0	1.0	-1.0	3.8
Ln (TRI MFN) standardized	232	0.0	1.0	-2.1	3.1
LPI customs standardized	232	0.0	1.0	-2.1	2.7
Potential need indicator (simple average)	232	0.0	0.4	-1.1	1.3
Potential need indicator (weighted cross section gravity estimates)	232	0.0	0.6	-1.2	1.8
Potential need indicator (weighted pooled gravity estimate)	232	0.0	0.6	-1.2	1.6

1.5 Correlation Table

CORRELATION TABLE	Ln (Aid for Trade/GDP)	Ln (GDP per capita) constant 2000	Rule of law	Limao and Venable standardized	Ln (TRI MFN) standardized	LPI customs standardized	Potential need indicator (simple average)	Potential need indicator (weighted cross section gravity estimates)	Potential need indicator (weighted pooled gravity estimate)
Ln (Aid for Trade/GDP)	1								
Ln (GDP per capita) constant 2000	-0.7844	1							
Rule of law	-0.1336	0.4103	1						
Limao and Venable standardized	-0.3044	0.4413	0.4379	1					
Ln (TRI MFN) standardized	0.1716	-0.3772	-0.3542	-0.4695	1				
LPI customs standardized	-0.4513	0.4794	0.4154	0.24	-0.3535	1			
Potential need indicator (simple average)	-0.4313	0.4013	0.3685	0.569	0.1307	0.6546	1		
Potential need indicator (weighted cross section gravity estimates)	-0.4954	0.5557	0.509	0.6839	-0.3393	0.8465	0.8794	1	
Potential need indicator (weighted pooled gravity estimate)	-0.4979	0.5571	0.51	0.685	-0.3396	0.8485	0.8815	0.9978	1

1.6: Average 2007-2010 Potential need for aid for trade (and countries included in aid for trade allocation estimation)

Country	Income level	Potential need indicator based on a simple average	Potential need indicator based on a weighted average (cross-sectional gravity)	Potential need indicator based on a weighted average (pooled gravity)
MNG	low	-1.05781	-1.10396	-1.10425
NAM	middle	-0.61672	-0.88471	-0.88664
MOZ	low	-0.80698	-0.84102	-0.84177
NER	low	-0.51668	-0.82275	-0.82286
RWA	low	-0.18877	-0.77735	-0.77915
DZA	middle	-0.33892	-0.75289	-0.75259
MLI	low	-0.30019	-0.59718	-0.59798
ZMB	low	-0.29562	-0.52711	-0.52547
ETH	low	-0.21228	-0.52157	-0.52203
NIC	low	-0.52605	-0.499	-0.4977
NPL	low	0.031714	-0.46099	-0.46142
CIV	low	-0.30018	-0.45228	-0.45142
BOL	low	-0.35567	-0.45216	-0.45148
NGA	low	-0.32465	-0.44209	-0.44396
EGY	middle	-0.27419	-0.41037	-0.40808
KEN	low	-0.21646	-0.36335	-0.36193
BFA	low	-0.12604	-0.34202	-0.34291
PRY	middle	-0.39162	-0.32838	-0.32866
CMR	low	0.009657	-0.32397	-0.3251
ECU	middle	-0.47163	-0.31126	-0.31121
TZA	low	-0.23456	-0.30561	-0.30372
PAK	low	-0.1984	-0.29157	-0.29504
SDN	low	0.432714	-0.26994	-0.26722
BEN	low	-0.01735	-0.25938	-0.25832
GHA	low	-0.16141	-0.25057	-0.24939
KGZ	low	-0.55247	-0.25022	-0.24883
GAB	middle	0.155707	-0.24529	-0.24493
ALB	middle	-0.27495	-0.21963	-0.22143
TGO	low	0.037191	-0.17682	-0.17393
SEN	low	-0.10037	-0.14711	-0.14721
PER	middle	-0.42114	-0.1232	-0.1259
JOR	middle	-0.09431	-0.10596	-0.10669
VEN	middle	0.174967	-0.08448	-0.07792
GTM	middle	-0.15965	-0.08283	-0.08243
GIN	low	0.185343	-0.07625	-0.07609
UKR	middle	-0.17344	0.063629	0.061241
IDN	middle	-0.11366	0.076862	0.077667
HND	low	0.02044	0.084593	0.084028
AZE	low	-0.05539	0.112012	0.110809
BRA	middle	0.270406	0.16294	0.164191
COL	middle	0.483618	0.209733	0.211232
PHL	middle	-0.10925	0.236522	0.237284
SLV	middle	0.164489	0.362603	0.362393

MEX	middle	0.330942	0.374465	0.371725
UGA	low	0.501706	0.404991	0.405217
PAN	middle	0.224954	0.452678	0.453527
ARG	middle	0.518234	0.53051	0.529739
URY	middle	0.286884	0.565875	0.565779
CRI	middle	0.16137	0.63785	0.63686
CHL	middle	0.284751	0.766249	0.764987
TUR	middle	0.365549	0.888893	0.890707
LKA	low	0.866331	0.929698	0.92828
THA	middle	0.5885	0.934505	0.935457
MYS	middle	0.53323	1.103345	1.103578
CHN	middle	0.608192	1.151943	1.151808
IND	low	1.160015	1.296452	1.294823
ZAF	middle	0.8295	1.377626	1.376915
MUS	middle	0.760414	1.379307	1.377416